Prehospital Pediatric Care

Shock
And
Shock Management

Instructor Guidelines

Prehospital Pediatric Care Instructor Guidelines

Acknowledgement

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Georgia Emergency Medical Services for Children

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This module will require approximately two hours to view the videotape, complete the workbook and discuss the concepts. The workbook has some added information on pathology of shock and congenital heart defects which are not discussed in the videotape.

Your local protocols regarding MAST, CPR, Intraosseous Infusion and other specific treatments for shock should be reinforced during the discussion time.

As with earlier modules, Shock can be utilized individually or in group sessions, but please remind the learners to follow the directions and work back and forth between the videotape and workbook.

The last section deals with the skill of pediatric vascular access and may not be appropriate for EMT-Basics. It is appropriate for use during an actual "hands on" practice session for EMT -I and Paramedics. The practical session for vascular access is planned for about three hours depending on the number of students.

The instructional modules are designed to reinforce learning, promote interaction and facilitate problem solving.

PART A

Desired Outcomes (PATHO-PHYSIOLOGY)

1. Inadequate tissue perfusion with oxygenated blood and inadequate removal of metabolic wastes

2 a. Small amount of total vascular volume
b. Large percentage of body weight which is water

3. Use formula of 80cc/kg. 18 pounds equals 8.1 kg so the child has 640 cc of vascular volume

4. A five-year old is estimated at 20 kg so this child has 1,600 cc of vascular volume

5. Metabolic wastes are acids and acidosis causes the pediatric heart to slow (bradycardia) and then stop (asystole)

6.
   a. Intracellular
   b. Interstitial
   c. Vascular

7. Intracellular

8. Vomiting, diarrhea, fever, tachypnea, burns

QUIZ QUESTIONS

1.a	2.d	3.c	4.b
5.a	6.a	7.a	8.c

PART B

Desired Outcomes (ETIOLOGY)

1. Hypovolemia

2.
   a. Hemorrhage due to trauma (most often automobile trauma)
   b. Dehydration from vomiting and diarrhea

3. When shock is present, the body cells have inadequate supplies of oxygen. Normal metabolism, which produces carbon dioxide, changes to an anaerobic form of metabolism which produces complex acids. Carbon dioxide is easily removed from the blood, but complex acids remain in the cells and the body pH changes to an acid state which threatens life if not corrected.

4. Septic shock is caused by the endotoxin of a bacteria. The endotoxin causes the arterial portion of the cardiovascular tree to enlarge or dilate. The result is an inadequate amount of blood to fill the now enlarged system. Blood pools in the venous area, cardiac filling and output are decreased and shock occurs.

5. Neurogenic shock

6.
   a. Tricyclic drug ingestion
   b. Trauma
   c. Acidosis
   d. Hypothermia

7. Ventricular septal defect

PART C

Desired Outcomes (ASSESSMENT AND HISTORY)

1. Recognize presence of shock and prevent deterioration

2. Tachypnea, Tachycardia, Delayed capillary refill

3.
   a. Decreased pulses
   b. Decreased LOC
   c. Cardiac arrhythmias
   d. Hypotension
   e. Cardiac Arrest

4.

a. Has the child had a fever
b. Has the child had vomiting or diarrhea
c. How many wet diapers in the last 6-8 hours
d. Does the child have any congenital heart defects
e. Has anything unusual happened during the last 24 hours
f. Is the child diabetic

QUIZ QUESTIONS

1.c	2.a	3.a	4.d
5.c	6.a		

PART D

Desired Outcomes (TREATMENT)

1. Hyperextend the neck

2.

a. Gastric distention
b. Nasogastric tube

3. Insure adequate airway and oxygenation, then BLS providers should request CPR from medical control with pulse of 60 or below. ALS providers should follow American Heart Protocol and start CPR when rate is 60 or below.

4.

a. Lactated Ringers
b. Normal Saline

5. 40-60%

6. 2cc/kg of D25/W

QUIZ QUESTION

1.c	2.a	3.c	4.c
5.c	6.c	7.a	8.c
9.d	10.b		

PART E

Desired Outcomes

1. Skill demonstration of organizing necessary equipment. If a list is made, check for:
   - Volume chamber
   - T -connector
   - Stopcock
   - 500cc bag of NS or LR

2. Hand -basilic or cephalic veins
   Arm -median cubital, basilic, cephalic veins
   Foot -dorsal arch
   Leg -great saphenous
   Scalp -frontal, superficial temporal

3. a. Gently tap area
   a. Lower the extremity
   b. Milk area with alcohol wipe
   d. Palpate area with fingertips

4. Skill demonstration

5. a. Site swells
   b. IV won't drip at an appropriate rate

6. 20cc/kg over 5-20 minutes

7. A 6 year-old would weigh about 22 kilograms. 20cc X 22 kilograms = 440cc total bolus.

8. Determine total amount of fluid to be given. Turn stop - cock off to patient and aspirate 50 - 60cc's into syringe. Turn stopcock off to volume chamber. Gently push the fluid into the patient. Look for response in vital signs after having administered full amount of fluid bolus. Repeat as indicated.

9.

a. Assemble and prepare equipment
b. Measure appropriate distance below patella and palpate for flat area of tibia
c. Clean skin with antiseptic solution
d. Place needle perpendicular to the skin at a slight angle away from the knee
e. Apply pressure and screw the needle through the cortex of the bone with a rotary motion
f. Observe to see if needle stands without supportin
g. Remove stylet
h. Aspirate bone marrow with fluid-filled syringe or flush intraosseous needle with IV solution
i. Connect IV fluid

10.

a. Area previously cannulated
b. Fractures or burns to leg areas

11.

a. Improper needle placement
b. Contamination of bone

QUIZ QUESTIONS

1.c 2.b 3.d 4.a
5.d 6.b